CLAIMS

1. (Currently Amended) An electric motor or alternator comprising:

a stator comprising pairs of magnets or coils for providing an electromagnetic field;

a rotor mounted on an armature shaft and rotatably positioned in said stator, said rotor comprising a commutator positioned on an armature shaft;

a brush holder plate positioned around said commutator and comprising a plurality of brush boxes each capable of receiving at least one brush; and

said brush box comprising a heat sink comprising a least one heat sink fin for dissipating heat generated by said brushes to lower a brush temperature, said heat sink fin being oriented substantially parallel to a direction of airflow around said plurality of brush boxes.

2. (Cancelled)

3. (Currently Amended) The electric motor or alternator as recited in claim 1 wherein said heat sink comprises a plurality of fins situated on at least one of said plurality of brush boxes so that the fins extend above a top surface of said brush box.

4. (Currently Amended) The electric motor or alternator as recited in claim 3 wherein said plurality of fins comprises at least ~~two~~ three fins.

5. (Original) The electric motor or alternator as recited in claim 4 wherein said plurality of brush boxes comprise a plurality of fins integrally formed, separately mounted or otherwise associated with said brush box with a good thermal connection.

6. (Original) The electric motor or alternator as recited in claim 5 wherein said plurality of brush boxes and said heat sink is copper, aluminum or other materials with high thermal conductivity.

7. (Currently Amended) The electric motor or alternator as recited in claim 4 wherein ~~said~~ in said plurality of fins, at least two fins are generally parallel to each other.

8. (Original) The electric motor or alternator as recited in claim 4 wherein at least one of said at least two fins are non-planar.

9. (Currently Amended) A method for decreasing brush temperature of an electric motor or alternator comprising the steps of:

providing a motor or alternator having a housing comprising a stator comprising at least two magnets or coils for providing an electromagnetic field;

providing a rotor mounted on an armature shaft , said rotor comprising a commutator positioned on an armature shaft;

providing a brush holder plate having a plurality of brush boxes each capable of receiving at least one brush; and

providing a heat sink on said brush box for dissipating heat generated by said brush;

said heat sink comprising a least one heat sink fin oriented substantially parallel to a direction of airflow around said plurality of brush boxes.

10. (Original) The method as recited in claim 9 wherein said method comprises the step of:

situating at least one fin on at least one of said plurality of brush boxes to provide said heat sink.

11. (Currently Amended) The method as recited in claim 9 wherein said method comprises the step of:

situating a plurality of fins on at least one of said plurality of brush boxes to provide said heat sink so that the fins extend above a top surface of the brush box.

12. (Original) The method as recited in claim 11 wherein said plurality of fins comprises at least two fins.

13. (Original) The method as recited in claim 9 wherein said method further comprises the step of:

providing a plurality of brush boxes comprising a plurality of fins integrally formed in, separately mounted or otherwise associated with said brush box with a good thermal connection.

14. (Original) The method as recited in claim 13 wherein method further comprises the step of:

integrally forming, separately mounted or otherwise associated with said plurality of brush boxes and said heat sink from copper, aluminum or other materials with high thermal conductivity.

15. (Currently Amended) The method as recited in claim 12 wherein ~~said~~ in said plurality of fins, at least two fins are substantially parallel to each other.

16. (Original) The method as recited in claim 12 wherein at least one of said at least two fins are non-planar.

17. (Currently Amended) A brush retainer comprising:

a brush holder plate having an aperture therethrough for receiving a commutator, said brush holder further comprising a plurality of brush boxes each having at least one brush therein for contacting said commutator when said commutator is positioned in said aperture; and said brush holder comprising a heat sink comprising a least one heat sink fin, said heat sink fin being oriented substantially parallel to a direction of airflow around said plurality of brush boxes.

18. (Original) The brush retainer as recited in claim 17 wherein said heat sink comprises at least one fin situated directly on said brush holder.

19. (Currently Amended) The brush retainer as recited in claim 17 wherein said heat sink comprises a plurality of fins ~~situated directly~~ on at least one of said plurality of brush boxes so that the fins extend above a top surface of the brush box.

20. (Original) The brush retainer as recited in claim 19 wherein said plurality of fins comprises at least two fins.

21. (Original) The brush retainer as recited in claim 19 wherein said plurality of brush boxes comprise a plurality of fins integrally formed, separately mounted or otherwise associated with said brush box with a good thermal connection.

22. (Original) The brush retainer as recited in claim 17 wherein said plurality of fins are substantially parallel to one another.

23. (Original) The brush retainer as recited in claim 22 wherein said plurality of fins are copper, aluminum or other materials with high thermal conductivity.

24. (Original) The brush retainer as recite in claim 17 wherein said brushes comprise a brush temperature without said heat sink and a second brush temperature with said heat sink, said second brush temperature being at least 9.7 degrees Celsius lower than said brush temperature.

25. (Original) The brush retainer as recited in claim 20 wherein at least one of said at least two fins are non-planar.